SUBJECT INDEX

A

Absorptiometry, 222
Acetyl-coenzyme A (CoA), 78, 407, 411–12
  malonyl, 78
Acetyl-coenzyme A carboxylase (ACC), 77–95, 159, 163–65, 167–77, 325, 328–31, 335–47, 405, 411–12, 421–22
  carboxylase, 164–65, 171–77
  fatty acids and, 77–95
    biogenesis of, 79, 94
    oxidation of, 79–80
  gene expression in cultured pancreatic β-cell line, 329–31
  genes and structure, 84–86
  malonyl-, 164–65
  promoters, 86–95
    cAMP activation, 93
    glucose activation, 93–94
    mRNAs, 86–94
    patterns of expression, 90–94
    structure, 86–94
  regulation of, 77–95
    cAMP and, 82
    cellular metabolites and, 79–80, 94
    covalent modification, 80–84, 94
    insulin and, 83, 95
    phosphorylation sites, 81–82
    protein kinase C and, 83
    reversible phosphorylation, 81–84
  transcription and translation, 84–94
Acute gastroenteritis
  E. coli and, 258
Acyl-CoA-binding protein (ACBP), 165
Acyl-coenzyme A (acyl-CoA), 327
Acylglycerols, 142
Adipocyte lipid-binding protein (AP2) gene, 284–85
Adipose tissue, 127–37, 325–47, 407
  lipogenesis in rodents, 327
  lipolysis, 127–37
  upper body, 130
Aging
  sense of taste and, 247
  (See also Elderly)
Alanine aminotransferase, 315, 320
Aluminum toxicity, 37–38, 46–47
  Alzheimer's disease and, 46
  amyotrophic lateral sclerosis and, 46
  calcium, magnesium, and manganese interactions with, 46
  iron deficiency and, 46–47
  Parkinsonian-dementia and, 46
Amino acid absorption and metabolism, 572–73
Anabolic hormones, 463–73
  muscle protein metabolism and growth hormone, 468–71
    insulin, 463–68
    testosterone, 472–73
Anemia
  lead-induced, 44–45
Angiogenesis suppression
  phytoestrogens and, 353, 369
Antioxidants, 53, 353, 369
  phytoestrogens, 353, 369
Apolipoprotein B, 407, 409
Arcobacter butzleri, 255, 264
Aspartate aminotransferase, 313, 315
ATP-citrate lyase, 578–79
Aureomycin, 7

B

Basal metabolic rate
  lactation and, 19, 23
Basic region/leucine zipper (bZIP) motif, 283–84
Binge eating syndrome, 239, 243–44
Bioimpedance analysis, 527, 541
Biopterin, 7
Biotin
  bacterial metabolism and, 4
Body composition assessment, 212–27
  nutritional status of children and, 211–30
    heredity vs. environment, 225
    normal vs. optimal growth, 224
    population vs. individuals, 222–23
    short vs. long-term growth, 224
Body composition research, 527–55
  atomic level, 530–38
    neutron activation analysis, 534–38
  biological effects, 528–30
  cellular level, 548–49
  five-level model of, 528–30
  methodology, 528–30
  molecular level, 538–48
    bioimpedance analysis, 541
    dual-energy x-ray absorptiometry, 542–45
    multicomponent models, 545–48
  reference method, 554–50
  rules, 528–30
  steady state, 529–30
  study method, 555
  tissue-system level, 549–54
    computerized axial tomography (CT), 550–54
    magnetic resonance imaging (MRI), 550–54
Breastfeeding (See Lactation)
Bromocriptine, 168
Bulimia nervosa, 243–44

C

Cadmium toxicity, 37–40, 47
  calcium metabolism and, 39
  iron deficiency and, 40
  osteomalacia and, 39
  osteopenia and, 39
  osteoporosis and, 39
  pregnancy and, 40
  vitamin D metabolism and, 39
  zinc metabolism and, 40
Cafestol, 305, 307–10, 314–21
Caffeine with ephedrine
  obesity treatment with, 387, 392, 396
Calcium metabolism
  aluminum toxicity and, 46
  cadmium toxicity and, 39
  lead toxicity and, 41–43
Caloric requirements
  children's, 227–28
  equine, 188–203

resting energy expenditure, 227–28, 230
total energy expenditure, 228, 230
cAMP responsive binding–element binding protein (CREB), 314
Cancer prevention
phytoestrogens and, 371–72
Carbohydrate
equine requirements, 185, 188–89
intake of
energy requirements and, 55–69
lipogenic enzyme gene expression and, 325–47, 405–27
supplements
maltodextrin-based, 53, 69–70
Carbohydrate metabolism, 405–27
glucagon and cAMP, 423
polyunsaturated fatty acids and, 422–23
primary hepatocytes and, 413–14
Carbohydrate response element, 325, 417–21, 424
Carnitine, 1, 12–13
Carnitine-palmitoyl CoA transferase, 78
Carrier proteins, 277
Castanospermine, 14
Catabolic hormones, 473–76
muscle metabolism and, 473–76
catecholamines, 476
glucagon, 474–75
glucocorticoids, 475
Catecholaminergic drugs
obesity treatment with, 388–89
Catecholamines, 128, 130, 136–37
CCAAT/enhancer-binding proteins, 283
Ceruloplasmin, 507–8
Children
nutritional assessment in, 211–30
body-composition assessment, 212–27
caloric requirements, 227–28
children with special needs, 228–29
heredity vs. environment, 225
normal vs. optimal growth, 224
population vs. individuals, 222–23
short vs. long-term growth, 224–25
Cholecystokinin, 391
Cholesterol
coffee beans and serum, 305–21 (See also Coffee beans)
synthesis in vivo, 586
Chronic renal failure
low-protein diet for, 435–52
Citric acid cycle, 577–78
Citrovorum factor, 5
Coffee beans
cholesterol-raising factor from, 305–21
brewing method and, 305–6, 315–21
cafestol, 305, 307–10, 314–21
diterpene lipids in, 305–21
kahweol, 305, 307–10, 314–21
triglycerides, 307–8, 311–13
Colipase, 141–42, 144–47, 152–55
structure, 144–47, 152–55
amino acid sequence, 145–46
lipolysis and, 152–55
procolipase processing, 146–47
Computerized axial tomography (CT), 527, 550
Copper
lead interactions with, 44–45
in human milk, 44
in lead-induced anemia, 44–45
Copper metabolism, 501–18
invertebrate, 501, 512–13, 517–18
iron metabolism and, 507–8
vertebrate, 506–8
Coronary heart disease risk
coffee drinking and, 306, 319–21
Corticotropin releasing factor, 597
food intake and
stress-induced, 607–8
Cost containment, 102
Coumestan, 353–56, 361–65
osteoporosis and, 370–71
sexual differentiation and, 365
in soy foods, 355–56
Cyclospora, 255, 269–71
Cryptosporidium, 255, 266–69
epidemiology, 267–68
transmission, 268–69
Cushing's syndrome, 475

D

Daidzein, 357, 359–61
cancer risk reduction and, 372–73
fertility and, 363
2-Deoxyglucose-6-phosphate, 337, 339
O-Desmethylangolensin (O-DMA), 357, 359, 361–62, 365
Dexamethasone, 475
Dexfenfluramine, 385, 387, 396, 398–99
Diabetes mellitus, 128, 463, 466
type 1
muscle wasting with, 463, 466
Diabetic nephropathy
dietary protein restriction with, 445–47
Dicarboxylic acids
gluconeogenic potential of, 569
Dicumaral, 5
Dietary intake
lactation and
efficiency of conversion to milk energy, 22–23
maternal protein intake and, 33
Diethylstilbesterol (DES), 354, 363
fertility and, 363–64
sexual differentiation and, 364
Digestible energy, 185, 191–84, 203–6
Diterpene lipids, 305–21
coffee and, 305–21
brewing methods, 305–6, 315–21
cafestol, 305, 307–10
kahweol, 305, 307–10, 314–21
liver and, 305, 313–15, 320–21
DNA topoisomerases, 368–69
Dual-energy X-ray absorbtiometry, 527, 542–45
Duchenne dystrophy, 475

E

Eating disorders, 239, 243–44
endogenous opiate peptides and, 243–44
taste and, 247
Elderly, 101–20
nutritional screening for, 101, 108–20
ethics of, 109
heart disease and, 113–14
participation, 110–11

prerequisites, 109
trials, 111–14
nutritional status, 104–7
changes with age, 104
international comparison, 104–6
malnutrition, 106–7
preventive nutrition, 101–20
heart disease incidence, 103
high-risk approach, 103–4
population-based effort, 103–4
(See also Aging)
Energy
available, 194–96
definition, 187
digestible (DE), 191–94, 203–6
equine, 185–206
expenditure, 19, 23–29, 60–70, 199–201
maintenance, 196
metabolizable, 191–95
net (NE) requirements, 191–206
Energy balance
neural networks regulating, 597–613
Energy expenditure, 19, 23–29, 60–70, 199–201
lactation and, 19, 23–29
warfighters' nutrition and
cold-weather high-fat, 62–64
functional testing, 59–62
hot weather, 65–66
maltodextrin-based carbohydrate supplements, 69–70
muscle metabolism and performance, 69–70
ration, cold weather, 64–65
restricted intakes/high-energy expenditures, 66–69
special purpose rations, 62–70
Enterodiol, 358
Enterolactone, 354, 358
Enterostatin, 391
Environmental extremes
warfighters' nutrition in, 62–70
Ephedrine with caffeine
obesity treatment with, 387, 392, 396
Equine energy requirements (See Horses' energy requirments)
Escherichia coli
acidic food associated with, 259
acute gastroenteritis and, 258
hemolytic uremic syndrome and, 258–59
Shiga-toxin producing, 255–60
strain differences in pathogenicity, 260
Estradiol, 354
Estrogen receptor, 354, 363–66
fertility and, 363–64
Exercise
elderly and, 103, 108
regional free fatty acid release during, 137
regional lipolysis during, 132
warfighters' nutrition and, 51, 53–54, 59–70

F

Fat
brown, 597, 610
innervation of, 610
metabolism of
triglyceride lipases and, 141–55
sensory response to, 242–43
taste preference and, 237–41, 243–49
white, 597–610
innervation of, 610
Fatty acid binding protein (FABP), 164–65, 176, 277–96
chromosome locations, 279
conserved elements, 287–90
functional analysis, 290–95
gene expression, 281–87
dietary control of, 284
gene regulation, 284–87
peroxisome proliferation–activated receptors and, 277–78, 281–84
transcription factors affecting, 282–84
Fatty acids, 77–95, 159–77, 277–78
acetyl-coenzyme A carboxylase (ACC) and, 77–95
biogenesis, 79
information transfer between cells and, 278
in milk, 159–77
control regulatory role of, 175–77
long-chain polyunsaturated (LC-PUFA), 160–62, 165–67, 177
medium-chain, 160–61
short-chain, 160–61
non-esterified, 159
oxidation, 79–80
synthesis and regulation, 77–95, 407, 411–12, 584–86
acetyl-coenzyme A carboxylase (ACC) and, 77–95
carboxylation of acetyl-CoA, 411–12
(See also Free fatty acid release, Free fatty acids)
Fatty acid synthase, 325, 330–47
expression, 330–47
glucose and, 330–32
in liver and adipose tissue, 333–34
Feeding
energy deficit–induced, 598–602
neuropeptide Y and, 598
opioids and, 601–2
hedonic-induced, 602–6
neuropeptide Y and, 602–3
opioids and, 603–6
neuroregulation of, 597–613
corticotropin releasing hormone and, 597–98, 607–8
neuropeptide Y and, 597–603, 609
opioids and, 597–98, 601–6, 608–9
stress-induced, 607–9
corticotropin releasing hormone and, 607–8
neuropeptide Y and, 609
opioids and, 608–9
Fenfluramine, 385, 387–88, 394, 396–97
Ferritin, 505, 514–16
Fertility
phytoestrogens and, 363–64
Fiber, 185, 204–6
equine requirements for, 204–6
Folic acid
bacterial metabolism and, 4
Food-borne hazards, 255–71
Arcobacter butzleri, 255–56, 264
Cryptosporidium, 255–56, 266–69
Cyclospora, 255–57, 269–71
Heliobacter pylori, 255–56, 265–66
Listeria menocytogenes, 255–56, 261–64
Shiga-toxin producing *E. coli*, 255–60
(See also Food safety)
Food choices
childhood, 245–46
food preferences and, 245–49
obesity and, 246
Food preferences, 237–49
"cravings"

endogenous opiate peptides and, 243–44
serotonergic system and, 243
economic variables, 237–38, 248–49
fat, 237–41, 234–49
sensory response to, 242–43
food choices and, 245–49
childhood, 245–46
obesity and, 246
hedonic response and, 237, 243, 247
measuring, 239–41
salty, 238, 241
sugar, 237–49
sensory response to, 241–42
Food safety, 255–71
hazard analysis critical control point programs for, 255, 271
(See also Food-borne hazards)
Free fatty acid (FFA) release, 127–37
regional differences in, 133–37
basal, 133–34
catecholamine-stimulated, 136–37
exercise and, 137
postprandial, 134–36
(See also Fatty acids, Free fatty acid release, Free fatty acids)
Free fatty acids, 142
Fumarate, 574–75
Fusarium, 354

G

Genistein, 354, 357, 360–66
angiogenesis and, 369
antioxidant effects, 369
cancer risk reduction and, 372
fertility and, 363
sexual differentiation and, 364
Glucagon, 422–23, 474–75
Glucocorticoids, 475
Glucokinase, 331, 334, 337–38
Gluconeogenesis
glucose production and, 588–89
Glucose
analogues, 335–36
glycolytic enzyme gene expression and, 325–47
lipogenic enzyme gene expression, 405–27
uptake in muscle, 487–98
Glucose/insulin response element (G/IRE), 419
Glucose metabolism and recycling, 575–76
Glucose-6-phosphate, 325, 330, 335–47, 405, 415–17
as signal metabolite in glucose, 338–40
Glucose response elements, 325
Glucose-responsive element, 93–94
Glucoseresponsive elements (GIREs), 340–47
Glucose transporters, 327
α-Glutamyltransferase, 315, 320
Glycerol, 127, 131–32
Glycogen, 188, 336
pathway, 336
Glycolytic enzyme gene expression, 325–47
glucose and, 329–47
glucose analogues and, 335–36
glucose-6-phosphate as signal metabolite in, 338–40
glycogen pathway and, 336
hexosamine pathway and, 336–37
molecular mechanisms, 340–45
pentose-phosphate pathway, 337–38
Growth, 211
assessment, 212–26
catch-up, 211, 226
circumferences, 214–17
head, 214–15
heredity vs. environment, 225
normal vs. optimal, 224
short vs. long-term, 224–25
skin-fold measurements, 215–17
Growth hormone, 165, 391, 457, 468–71
muscular protein metabolism and, 457, 468–71
obesity therapy and, 391
Gut peptides
obesity treatment with, 390–91

H

Hazard analysis critical control point (HACCP) programs, 255, 271
Heart disease
decrease in incidence of, 103
nutritional screening, 113–14
prevention of
phytoestrogens and, 373–74
Helicobacter pylori, 255, 265–66
Hematopoiesis
lead exposure and, 44–45
low dietary copper and, 44–45
Heme, 503–4, 516–17
Hemolytic uremic syndrome
E. coli and, 258–59
Heredity, 211, 225
Hexokinase, 328, 333, 337–38
Hexosamine pathway, 336–37
High-carbohydrate, low-fat diet
lipogenesis and, 407–27
Hindlimb perfusion, 487, 493–97
Horses' energy requirements
energy content of feed and, 190–203
digestible energy, 191–92
fiber and, 185, 204–6
net energy, 191–203
total digestible nutrients, 191
energy sources, 187–90
carbohydrate, 188–89
Human milk
efficiency of conversion of dietary intake to milk energy, 22–23
energy concentration of, 21–22
lead-copper interactions in, 44
non-protein nitrogen content of, 30–33
protein content of, 30–33
Hypercalciura
cadmium toxicity and, 39

I

Indolizidine alkaloids, 1, 14
Insulin, 128, 131, 159, 163, 168–73, 284, 325, 405–6, 413–15, 157, 463–68, 487–98
hemodynamic actions of, 487–98
insulin-mediated vasodilation, 487–91
lipogenic gene expression and, 405–6, 413–15
lipolysis and, 128, 131
milk lipid secretion and, 159, 163, 168–70, 173
muscle protein metabolism and, 457, 463–68
nutritive blood flow in muscle and, 492–97
Insulin-like growth factor, 168
Insulin response element, 332
Intermediary metabolism, 559
Intestinal fatty acid–binding protein gene, 285–86
Intracellular lipid-binding proteins, 277–96
fatty acid–binding proteins, 277–96

(See also Fatty acid–binding proteins)
Invertebrates
iron and copper metabolism in, 501, 512–18
as models for understanding vertebrate nutrition, 502
Iron deficiency
cadmium toxicity and, 40
lead toxicity and, 43–44
mercury toxicity and, 46–47
Iron metabolism, 501–18
copper metabolism and, 501–18
copper oxidases and, 510
invertebrate, 501, 512–18
ferritin and, 514–16
heme metabolism and, 516–17
iron regulatory proteins and, 516
iron responsive elements and, 516
transferrins and, 513–14
vertebrate
ferritin and, 505
heme and, 503–4
iron and, 503
iron regulatory protein and, 506
iron responsive element and, 505–6
transferrin and, 504–5
transferrin receptor and, 505
in yeast cells, 501, 508–12
Iron regulatory proteins, 506, 516
Iron responsive element, 505–6, 516
Isocitrate dehydrogenase reaction reversibility of, 574
Isoflavone, 353–75
antioxidant effects, 369
cancer risk reduction and, 371
food sources of, 355–56
human reproductive hormones and, 366–67
metabolism and disposition, 357–61
Isotope dilution, 221

K

Kahweol, 305, 307–10, 314–21
Keratinocyte lipid-binding protein gene, 286–87
Ketoadipate, 8–9
Ketone body metabolism, 570–71
Kidney, 435–52
renal disease
diabetes mellitus and, 445–47
low-protein diets with, 435–52

L

Lactation, 19–34
maternal energy requirements and, 20–29
basal metabolic rate and, 23
dietary-induced thermogenesis and, 23–24
milk energy concentration, 21–22
milk volume and, 20–21
mobilization of body reserves, 25–26, 29
negative energy balance and, 27–29
nutritional status and, 21
physical activity level and, 23–24
total daily energy expenditure, 25–26
protein requirements during, 30–34
factorial approach to estimating, 30–33
recommended protein intakes, 33
Lead toxicity
calcium metabolism and, 41–43
iron deficiency and, 43–44
lead-copper interactions, 44–45
in human milk, 44
in lead-induced anemia, 44–45
low-level lead exposures and, 40–41
zinc metabolism and, 44
Leptin
decreased energy intake with increased energy expenditure, 610–11
obesity treatment with, 392–93
Ligand X receptor, 282
Lignan, 353–54, 356–61, 371–72
cancer risk reduction and, 371–72
food sources of, 356–57
metabolism and disposition, 357–61
Lipid metabolism, 305–21
Lipogenesis, 405–27, 587
thyroid hormones and, 424
Lipogenic enzyme genes, 325–47, 405–27
carbohydrate regulation of, 405–27
metabolic vs. hormonal signals for gene activation, 412–13
postranscriptional mechanisms, 409–10
transcriptional regulation, 4009–10
expression of, 325–47
glucose and, 329–47
glucose analogues and, 335–36
glucose-6-phosphate as signal metabolite in, 338–40
glycogen pathway and, 336
hexosamine pathway and, 336–37
molecular mechanisms, 340–45
pentose-phosphate pathway and, 337–38
Lipolysis, 127–37, 141–55
basal, 129
catecholamine-regulated, 129–31
colipase, 141–42, 144–47, 152–55
gender differences in, 127
insulin-regulated, 131
in vivo, 132–37
regional free fatty acid release and, 132–37
pancreatic triglyceride lipase, 141–55
regional differences in, 127–37
exercise and, 132, 137
in situ measurements, 131–32
Lipoprotein(a), 308, 310, 312
Lipoprotein lipase, 159, 164
regulation of mammary, 167–68
Listeria monocytogenes, 255–56, 261–66
high-risk foods, 262
strain differences in pathogenicity, 263–64
Listeriosis, 261–64
Liver
carbohydrate regulation of lipogenic enzyme genes, 405–27
diterpenes in coffee and, 305, 313–15, 320–21
glycerol production and cycling in, 571–72
lipogenesis in, 327
L-pyruvate kinase gene expression in, 329, 405, 409–10
Liver fatty acid–binding protein gene, 286
Liver glycogen synthesis, 576

Lysine, 1, 8–10, 12–13
biosynthesis in fungi, 9–10

M

Magnetic resonance imaging (MRI), 527, 550
Malnutrition
among elderly, 106–7
defined, 106
Malonyl-coenzyme A (malonyl-CoA), 78, 327, 329
Mammary gland, 159–77
lipid synthesis regulation, 168–70
lipoprotein lipase regulation, 167–68
milk lipid composition and secretion, 170–75
initiation of lactation and weaning, 171–72
tricylglycerol synthesis and secretion in, 163–70
Mass isotopomer distribution (MID) analysis, 559–89
application, 564–68
measurement, 561–64
nutrient metabolism studies, 568–79
rate of synthesis of polymeric molecules, 579–89
Maltodextrin-based carbohydrate supplements, 53, 69–70
Maternal nutrition
energy needs during lactation (See Lactation)
Mazindol, 385, 387–88, 394, 396–97
Menopause symptoms
phytoestrogens and, 370
Mercury toxicity, 37–38, 45, 47
selenium and, 45
Metabolic regulation
stable isotopes and, 559
Metallothionein, 47
Metal toxicity, 37–47
aluminum, 37–38, 46–47
calcium, magnesium, and manganese and, 46
iron and, 46–47
cadmium, 37–40, 47
calcium metabolism and, 39
iron deficiency and, 40
pregnancy and, 40
vitamin D metabolism and, 39
zinc metabolism and, 40
lead, 37–38, 40–45, 47
calcium metabolism and, 41–73
iron deficiency and, 43–44
lead-copper interactions, 44–45
low-level exposures, 40–41
zinc metabolism and, 44
mercury, 37–38, 45, 47
interactions with selenium, 45
3-Methylhistidine, 462
Milk
fatty acid synthesis and, 175–77
triacylglycerols in, 159–77
fatty acid composition of, 159–63
Military operational rations, 51–70
carbohydrate intake, 55–69
functional testing, 59–62
body composition, 60
body weight, 60
energy balance, 61
hormonal markers, 61
metabolic status, 60–61
micronutrient status, 61
nitrogen balance, 60
metabolic needs in specific settings, 53–54
special purpose rations, 62–70
cold-weather, high-fat, 62–64
hot-weather, 65–66
muscle metabolism and performance, 69–70
ration, cold weather, 64–65
restricted intake/high-energy expenditures, 66–69
testing
calcium intake, 57
gastrointestinal problems, 57
palatability, 57–59
weight loss, 55
Military Recommended Daily Allowances, 52
Milk lipid secretion, 159–77
acetyl coenzyme A carboxylase and, 159
alterations in, 162–63
insulin and, 159, 163
non-esterified fatty acids and, 159
prolactin and, 159
Mitochondria, 79–80
Monoacylglycerols, 142
Multiple Risk Factor Intervention Trials, 113–14
Muscle glucose uptake
blood flow and regulation of, 487–98
insulin-mediated vasodilation and, 488–98
microcirculatory glucose exchange and, 491–92
nutritive-to-non-nutrative blood flow, 492–97
Muscle protein metabolism, 457–78
hormonal regulation of, 457–78
catecholamines, 476
cytokines, 477
glucagon, 474–75
growth hormone, 468–71
insulin, 457, 463–68
insulin-like growth factor-1, 468–71
prostaglandins, 477
thyroid hormone, 476–77
testosterone, 472–73
measurement of, 459–62
Myocardial infarction
coffee-drinking and predisposition to, 306, 319–21

N

Naloxone, 243, 602–6
Naltrexone, 243, 606
Nephrotoxicity
cadmium toxicity and, 38–39
Net energy system, 185, 191–206
Neural networks
energy balance regulation, 609–11
food intake and, 597–609
Neuropeptide Y
energy management and, 609–10
food intake and
energy deficit–induced, 598–602
hedonic-induced, 602–3
stress-induced, 609
site- and stimulus-specific regulation, 611–12
Neutron activation analysis, 527, 534–38
Nitric oxide, 487–89
Nutrient metabolism
mass isotopomer distribution analysis and, 568–79
Nutritional status
children's, 211–30
absorptiometry methods, 222
anthropometric assessment, 213–21
bioelectrical methods, 221–22
growth assessment, 212–26
isotope dilution methods, 221
reference data, 217–18

Nutritional transition
fat and sugar and, 237, 249
Nutrition screening, 101, 108–20
defined, 108
diagnostic testing vs., 109–10
ethics of, 109
heart disease, 113–14
"inverse care law," 110–11
prerequisites, 109
sentinel screening questions, 115
Nutrition Screening Initiative, 114–15, 117–19

O

Obesity, 127–32, 243–46, 383–400
as chronic disease, 384–87
defense of body weight, 387
mortality from, 384
prevalence in US, 384
co-morbidities of, 384
regional differences in lipolysis and, 127, 130–32
taste and food choices, 246
Obesity drugs, 383–400
adverse events with, 383, 398–99
and comprehensive therapy program, 399–400
contraindications for use of, 394
dexfenfluramine, 385, 387, 394, 396, 398–99
dosage regimens, 394–95
ephedrine with caffeine, 387, 392, 396
fenfluramine, 385, 387–88, 394, 396–97
insurance coverage of, 385
leptin, 392
mazindol, 385, 387–88, 394, 396–97
mechanisms of action, 385–93
Obesity therapy, 383–400
adverse events of, 383, 398–99
changes in CNS, 383, 398–99
primary pulmonary hypertension, 383, 399
behavioral, 383–85
combination-drug results, 396–98
side effects, 397
comprehensive, 399–400
guidelines to select patients for, 393–94
pharmacologic, 383–400
mechanisms of action, 385–93
Opioids
food intake and
energy deficit–induced, 601–2
hedonic-induced, 602–3
stress-induced, 608–9
Osteomalacia
cadmium toxicity and, 39
Osteopenia
cadmium toxicity and, 39
Osteoporosis
cadmium toxicity and, 39
phytoestrogens and, 370–71
OXCHECK trials, 112
Oxysterol formation, 568

P

Pancreatic β-cell, 425–27
Pancreatic triglyceride lipase, 141–55
catalytic site, 147–49
interfacial activation, 149–52
enzyme model, 149–50
lid domain opening and, 151–52
substrate model, 149–50
molecular basis of activity, 147
structure, 142–44
(See also Triglycerides)
Pentose-phosphate pathway, 337–38
Peroxisome proliferator–activated receptors, 277–78, 281–84
Peroxisome-proliferator response elements, 282
Peroxisomes, 79–80
Phosphorylation
reversible
acetyl-coenzyme A carboxylase regulation and, 81–84
Phytoestrogens, 353–75
angiogenesis suppression and, 353, 369
antiestrogenic effects, 353
antioxidant effects, 353, 369
estrogen synthesis and availability and, 366
fertility and, 363–64
foods containing, 353, 355–57
heart disease risk reduction and, 373–74
human reproductive hormones and, 366–67
menopause symptoms and, 370
metabolism and disposition of, 357–61
osteoporosis and, 370–71
sexual differentiation and, 364–65
tumor cell differentiation and, 367–69
Pipecolic acid, 10
Polyunsaturated fatty acids (PUFA)
lipogenic enzyme regulation and, 422–23
Pregnancy
cadmium toxicity and, 37, 40
Prevention (See Preventive nutrition)
Preventive nutrition, 101–20
health behaviors and, 107–8
heart disease and decreased incidence of, 103
high-risk approach to, 103–4
population-based efforts, 103–4
recommendations, 120
screening, 101, 108–20
Primary pulmonary hypertension
obesity drugs and, 383, 399
Prolactin
milk lipid secretion and, 159, 163, 165, 168
Protein
low-protein diets for renal disease, 435–52
synthesis, 457–78, 589
very-low-protein diet, 439
Protein tyrosine kinases, 368
Purines
intestinal absorption and metabolism, 573–74
Pyrimidine
de novo synthesis in hepatocytes, 583–84
intestinal absorption and metabolism, 573–74
L-Pyruvate, 329
Pyruvate dehydrogenase, 170, 173
Pyruvate kinase
L-type, 405, 409–10, 417–19
L-Pyruvate kinase gene expression, 329, 334–35, 340
in liver cells, 334
in pancreatic β-cell lines, 335

R

Reference data, 217–18
Relief missions
Multi-Faith Meal for, 59
Renal disease
low-protein diets for, 435–52
Renal function
monitoring changes in, 431–39
Retinoid-binding proteins, 279
Retinoid X receptor, 282

S

S_{14}, 405, 490–11, 417–19
Saccharopine
  lysine biosynthesis in fungi and, 9–10
Screening (See Nutrition screening)
Selenium
  mercury toxicity and, 45
Serine proteases, 147–48
Sexual differentiation
  phytoestrogens and, 364–65
Shiga-toxin, 255–60
Skeletal muscle, 457–78, 487–98
  insulin-mediated vasodilation and, 487–98
  metabolic role, 458
  protein synthesis in, 457–78
Skin-fold measurements, 215–17
Slaframine, 14–15
Soy foods, 355–61
  cholesterol-lowering effect of, 373–74
  phytoestrogens and, 355–61, 367, 369–73
Stable isotopes, 559
Sterol regulatory element binding protein 1, 344
Succinate formation, 574–75
Sugar
  sensory response to, 241–42
  taste preference for, 237–49
Synaptosomes
  transamination of, 569

T

Tamoxifen, 354
Taste, 237–49
  bitter, 244–45
  genetic markers for, 237, 244–45
  preference, 237–49
    children's, 238, 245–49
    externality hypothesis of, 242
    food choices and, 245–49
    measuring, 239–41
    obesity and, 243–46
  responses, 237, 241–44
Thermogenesis19, 23–24, 386–87, 598, 609
  dietary-induced, 19, 23–24, 386–87
Thymulin, 44
Total body water measurement
  absorptiometry methods, 222
  bioelectrical method, 221–22
  isotope dilution method, 221
Total digestible nutrients, 191
Toxic–essential metal interactions (See Metal toxicity)
Tracer methodology, 559–89
  secondary tracers, 579
Transferrin, 504–5, 513–14
  receptor, 505
Triacylglycerol (TAG), 159–77
  alveolar cell and, 166–67
  composition of milk, 173–74
  fatty acid composition of, 159
  mammary lipoprotein lipase regulation, 167–68
  synthesis and secretion, 63–70
Triglycerides, 128, 141–55, 188, 307–8, 311–13, 327, 406–7
  (See also Pancreatic triglyceride lipase)
Tyrosine kinase inhibition
  phytoestrogens and, 353

U

Upstream stimulating factor (USF), 325, 342–44, 347, 417–21
  role in carbohydrate response, 419–21
Urea, 569–70
USF (See Upstream stimulating factor)

V

Vitamin B, 1–2, 4–5
Volatile fatty acids, 190–92

W

Warfighter Physiological Status Monitoring, 62

X

Xylulose-5-phosphate, 38, 405, 415–17

Y

Yeast
  iron and copper metabolism in, 501, 508–12
  iron and copper transport in cells, 508–9
  mechanisms similar to vertebrates, 509–12

Z

Zinc metabolism
  cadmium toxicity and, 40
  lead toxicity and, 41